

A NEW PHREATOICID FROM THE GRAMPIANS, VICTORIA

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Fig. 1-18.

FAMILY PHREATOICIDAE.

AMPHISOPUS AMBIGUUS sp. nov.

Specific Diagnosis. Body moderately slender, surface smooth and free of hairs. Eyes moderately developed. Head not as long as first and second peraeon segments together; first peraeon segment completely fused on pleural line; first joint of first antenna longer and stouter than second or third. Fifth joint of second antenna long, first and second compressed. Right mandible with secondary cutting edge. Coxae of all legs fused. Sixth joint of the first peraeopod nearly circular (female and male); fourth peraeopod not differentiated; pleural walls of peraeon just covering arthroidal membrane of basis. Telson large, convex, but flattened dorsally, slight postero-dorsal ridge flanked by two stout spines on either side. Uropods stout, basis extending to end of telson. Inner ramus longer than basis. Pleopods with epipodites on 3-5. Last joint of exopodites of pleopods furnished with plumose setae, penial filaments sickle-shaped and non-setose. Pleura of pleon well developed, concealing pleopods.

Colour, slatey-brown, with mottled markings.

The following detailed description is taken from three specimens which had been forwarded dry, and were in consequence slightly damaged.

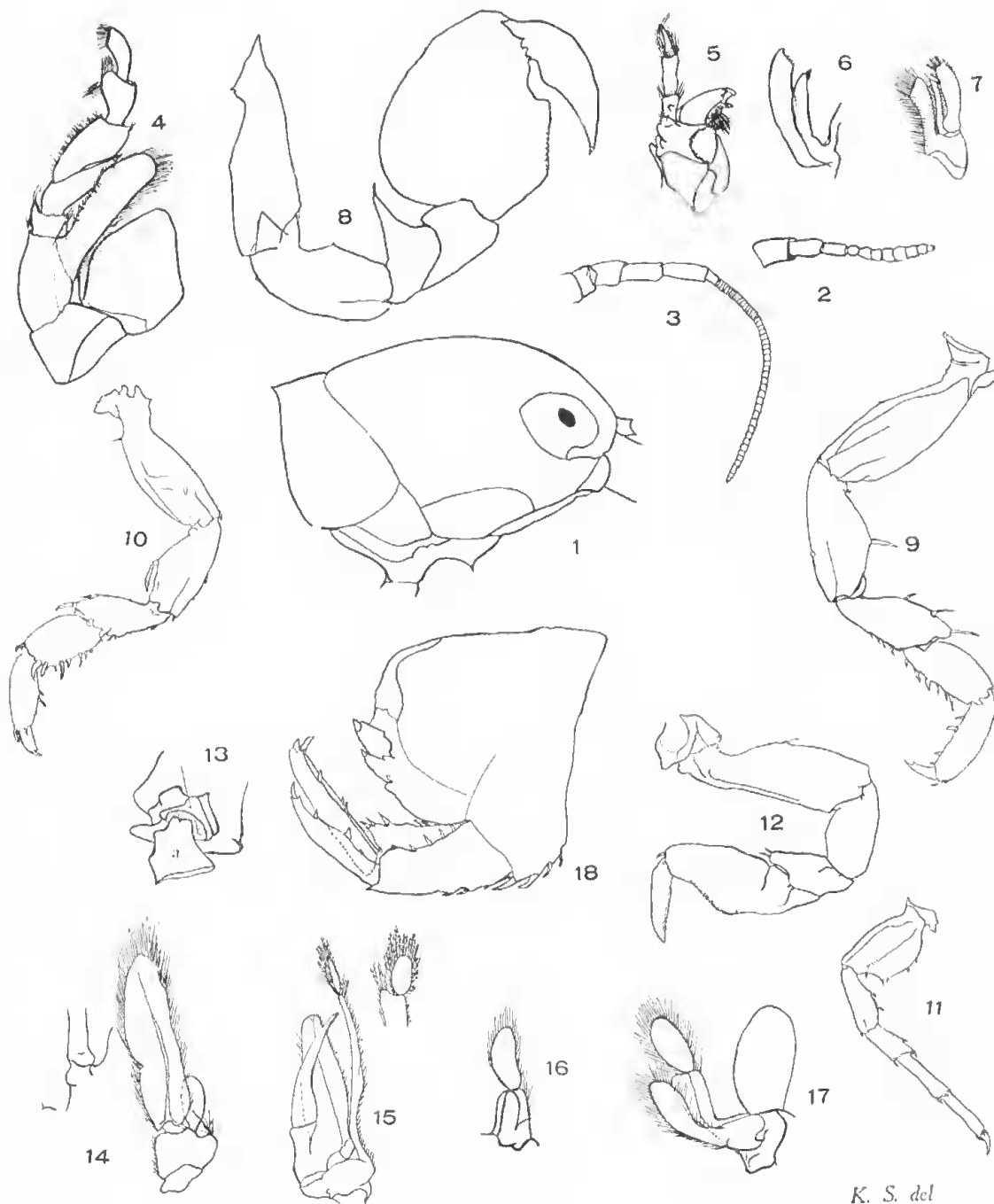
The body is slender. Ratio $\left\{ \begin{array}{l} \text{Pleon and Telson} \\ \text{Peraeon and Cephalon} \end{array} \right. = \frac{60-64}{100}$

The three specimens fall within this range. In a specimen 24 mm. in length the following measurements obtain:

	Length.	Width.	Depth.
Cephalon	5 mm.	3 mm.	3 mm.
Free peraeon	10	3	2.5
Pleon	6	3	4
Telson	3	3	2.5

Head: Dorsal surface convex. Anterior edge projects slightly over basal joints of antennae. Eyes small. No trace of line of fusion of first segment; line of fusion of second segment marked with a slight groove—this is more prominent on the side-plate.

Peraeon: Semi-cylindrical; pleura of segments 2-4 slightly developed, just covering the arthroidal membrane of the basal joints (coxal joints of the first peraeopods uncovered).



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Fig. 1-18. *Amphisopus ambiguus*; 1, cephalon; 2, first antenna; 3, second antenna; 4, maxilliped; 5, mandible; 6, first maxilla; 7, second maxilla; 8, gnathopod (♂) 9, second peraeopod; 10, fourth peraeopod; 11, seventh peraeopod; 12, gnathopod, (♂) regenerated; 13, coxa, (♀) fourth peraeopod; 14, first pleopod; 15, second pleopod; 16, third pleopod; 17, fourth pleopod; 18, telson and uropod.

Pleura of segments 5, 6, 7 are progressively deeper, and possess a terminal spine anteriorly; 3, 4, 5 equal in length, and twice length of 2; 7 equals 2 (1 mm.), 6 subequal.

Pleon: First segment slightly narrower than last peraeon segment; free edges ovate, and fringed with moderate spines, not notched. Sixth fused to telson, line of fusion marked obliquely on the lower half of the side wall. There are no spines on this line, but four stout spines are carried on the anterior ventral edge of side-plate of the segment.

Telson: Large, dorsal line flatly convex in profile; transverse section horseshoe-shaped, with forward edge flattened. Postero-dorsally a slight ridge occurs in the median line; this is smooth and not tipped by a spine, but is flanked on each side by a ridge, which, originating from the anterior end of the median ridge, describes a semi-circle and, after running parallel with the median ridge, meets the base of the largest postero-lateral spine. A shallow depression is thus formed on each side of the median ridge. The postero-dorsal aspect between the ventral edge of the telson immediately above the anal opening, and the slight projection of the median ridge is hollowed, triangular in shape, with a curved base. The postero-lateral margins of the telson on level with this base terminate on each side in a large spine; below this is a second, smaller, and below this a third, very small. There is no median terminal protuberance or spine. This sculpture of the telson is typical of the species.

First antenna reaches to the middle of the fourth joint of the peduncle of the second. Peduncle: first joint stout second and third progressively shorter and more slender, non-setose.

The second antenna reaches to the sixth peraeon segment. First joint of peduncle compressed and stout, second comparable, third longer and slenderer, fourth and fifth progressively longer and slenderer. Fifth equals twice third. The flagellum is twice as long as the peduncle, and consists of about 40 joints, the first being made up of several partially-fused joints.

The mandibles agree in general shape with those of *P. australis* (as figured by Chilton, Records Aust. Mus., 1891, and as noted in specimens kindly furnished by the Australian Museum), but are less setose, with no plumose setae evident. There is a rudimentary cutting edge on the right mandible, without teeth, and the spine-row has become a spine nodule bearing a tuft of hair-like spines. The palp, with the left stouter and longer than right, is three-jointed, second joint the longer, third a stout, curved finger; long simple setae arise from the anterior margins of the joints. (In *P. australis* both palps appear to be of equal development.)

The first maxilla has its inner lobe arising from a swollen base, and bears four large simple setae and one small seta on its distal edge; the outer lobe, one and one-

third as long as the inner, bears 25 curved, spine-like setae on its distal edge, forming a comb-like structure.

The second maxilla is comparable with that figured for *P. australis*; the base is reduced, the three lobes are fringed on their inferior edges with serrulate setae. Palp one-jointed, inner lobe bearing an accessory row of stiff simple setae close to the inferior margin. No plumose setae are visible on the maxillae. Lower lip bilobed.

The maxilliped: First joint with large epipod, one edge of which normally fits in a groove cut in the second and third joints; second joint, the longest, bearing a plate, which reaches to the middle of the fifth joint, is fringed with long, simple setae; is nearly four times longer than broad, and which bears six coupling hooks on its inner edge. The third joint is the shortest, about two-thirds as long as broad. The superior edge of the fourth joint is strongly produced forwards; the fifth is subequal to the second; sixth and seventh subequal, and furnished with long tufts of setae. The whole appendage is strong and well developed.

Gnathopod and peraeopods: The coxae are completely fused in both male and adult females (see fig. 13 a, second joint), of all legs. The gnathopod is strong and powerful in the male, that of the female being very much more slender, and with the "hand" smaller than that of the male, and bearing on the distal edge of the seventh joint a thick tuft of long hairs. The hand is subcircular, the sixth joint being two and three-quarters the width of the fifth. The palm bears blunted tubercles on its distal border. The seventh joint is stout, and terminates in a secondary unguis.

The second and third peraeopods are equal, with the fourth slightly shorter, and not differentiated in the male except that the spines of the fifth joint are stouter and more numerous. Otherwise these appendages are similar to those of *P. australis*, except that the spines, although less numerous, are relatively very stout.

The fifth, sixth, and seventh peraeopods are similar to *P. australis*, the spines which occur on the second, third, and fourth joint being short and more curved, with a few short scattered hairs among them. Each of the peraeopods bears a small bifid unguis.

Pleopoda: These are normally just hidden by the pleural walls of the pleon, and all bear plumose setae on the terminal joints of the exopodite. The second pleopod closely resembles that of *A. lintoni*. The penial filament, bearing no setae, is equal in length to the endopod; is sickle-shaped, and appears to be freely jointed. The second joint (ovate) of the exopod bears plumose setae on its distal half.

The uropod is very stout, basis extending to the end of the telson. Outer ramus equal in length to basis; inner longer, proportion 9:7. The rami are slightly hollow on their dorsal surfaces, and each edge is stoutly spined. The outer ramus is tipped with one spine, inner with four. The upper edge of the base is strongly concave, edges spined. The inner edge is produced posteriorly to a stout boss, tipped with three spines; the ventral edge of the fused sixth segment bears four stout spines.

The penes is a paired organ arising from the base of the fused coxae near the posterior edge of the last thoracic segment. It is non-setose.

Loc.—Victoria: The Grampians, Fish Falls (R. V. Southcott, Dec., 1935). Types in South Australian Museum, Reg. No. C. 2115, 2116.

I am indebted to the Directors of the Australian and National Museums for specimens of *P. australis* and *P. terricola*. *A. ambiguus* was found under stones in damp places at Fish Falls, and in structural details and general shape closely resembles *Amphisopus tintoni* (Nicholls) and *A. palustris* (Glaupert). The telson and uropods are unlike those of *P. terricola*. The new species may be readily separated from the other members of the genus by the uropods, which have the inner ramus longer than the outer.

I have followed Nicholls (1926) in the naming of this genus, as it antedates Shepherd's excellent revision of the family (1927).

Useful discussions of this family are to be found in the following papers:

Nicholls and Milner, *Journ. Roy. Soc. W. Aust.*, x, No. 6, 1923, p. 23.

Nicholls, *loc. cit.*, x, No. 13, 1924, pp. 92-104.

Nicholls, *loc. cit.*, xii, 1926, p. 179.

Barnard, *Trans. Roy. Soc. S. Africa*, xiv, 1927, pp. 139-161 (Biological study).

Shepherd, *Proc. Zool. Soc. London*, 1927, pp. 81-124.

The reference lists in the above papers contain the full bibliography of the family.